Science and Religion: The New Dialogue

The Rev. Canon Christoph Keller, Th.D.
St. Margaret's Episcopal Church
Little Rock, AR

Lecture Three
Is the Universe Designed for Life? The Anthropic Coincidences and What They Mean
Sunday, November 29, 2009

Week 3: Is the Universe Designed for Life? The Anthropic Coincidences and What They Mean

Recapitulation

Last week, I challenged two popular opinions about the way religion and science relate:

(1) The myth of N.O.M.A., that wants us to see religion and science as "non-overlapping magisteria," separated by a Berlin Wall.
(2) The myth of science-religion "Warfare," according to which T.H. Huxley sees strangled theologians lying at the cradles of the sciences, like the strangled snakes beside the crib of Hercules.

I hope you could begin to see that both of those myths are simplistic and, in many ways, unreasonable.

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Preview

This week, we are going to take a step out into deeper water, with more important claims about the reasonableness of faith in God.

This lecture's title is: "Is the Universe Designed for Life? The Anthropic coincidences and What They Mean."

Introduction

My lovely nineteen year old daughter enjoys slasher movies, and the worst thing that has happened to me lately is that I let her talk me into to taking her to one. It was *Saw VI*. We will not be discussing details of *Saw VI* here in church on Sunday morning.

But let us just suppose for purposes of argument that you've been taken captive by an evil genius, who has put you in a cage. He has decided to give you a certain opportunity to live. He says to you: pick three numbers between 0 and 100. You pick the numbers 88, and 1, and 5. Then he takes out a ruler and a calculator, and shows you the sports pages, a tennis ball, and a basketball. He tells you: "I'll tell you what I'm going to do. If the ratio between the volume of these two balls is exactly 88/1; (not 87, not 89) and if the average margin of victory in Sunday's National Football League games is precisely five points (not four, not six) greater than the average margin of victory in Saturday's Southeastern Conference football games, then I will let you go."

What are you going to think about your odds? How about: "Somewhere between slim and none."

The evil genius does the math, and these are the results:

The ratio between the volume of the basketball and the tennis ball comes out 88/1. And over the weekend games, in the NFL the average margin of victory was 11 points, and in the Southeastern Conference it was 6, for a difference of precisely 5.

Now what are you going to think? How about: "Either I am the luckiest person on the planet earth," or "Someone must want me to live."

In the 1970's, some physicists began to see that, in a surprising number of remarkable respects, this universe appears to have been designed for life. As Stephen Barr, who is himself a physicist, has put it: "Certain features of the laws of physics seem—just coincidentally—to be exactly what is needed for the existence of life to be possible in our universe."

The numbers seemed to show "exactly what one might expect . . . if the universe was created with us in mind."[1]

[1] Barr, *Modern Physics and Ancient Faith*, 25.

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Philosophical Context

Before going into details, I want to take a moment to situate them philosophically, within the framework of traditional arguments for God's existence

In this section, I am going to follow Neil Manson's introduction to his book, *God and Design: The Teleological Argument and Modern Science*.[2]

In philosophy of religion, there are several major types of arguments for God's existence. Depending on the type, these arguments can be more, or less, sensitive to discoveries in science.

"Ontological Arguments," for example, are not at all sensitive to science. They work from premises which, as some will claim, "can be known to be true independent of sense experience."[3] That is an *a priori* argument: meaning "prior to" sense.

Most arguments for God's existence are *a posteriori*—meaning "after" sense. These arguments rely on at least one premise "that can be known only through observation of the empirical world."[4]

[2] Neil A. Manson, "Introduction," to Neil a. Manson, ed., *God and Design: The Teleological Argument and Modern Science* (New York: Routledge, 2003), 1–23.
[3] Ibid., 1.
[4] Ibid.

"Cosmological" arguments are *a posteriori*. For example, one argument "moves from the existence of causal sequences in the observable world to the existence of a first cause" who, according to the argument, is God.[5] One of Aquinas's best known proofs for God's existence is an argument in this form.

Cosmological arguments depend on sense experience, but they are not very sensitive to changes in science. This is because, as Manson explains, "the premises are highly general and apparently incorrigible. The passage of time and the development of scientific knowledge will presumably provide neither more or less reason to believe that there are sequences of cause and effect relationships."[6]

There is another set of *a posteriori* arguments, though, that is more sensitive to developments in science. These are called "teleological arguments," or, in simple English, "design arguments." Design arguments come in two types, that I will call "cosmic" and "organic."

A half a century ago, both types were considered dead.[7]

The organic argument had died in 1859, with Darwin's publication of the *Origin of Species*. Before Darwin, William Paley had based his very famous argument for divine design on the intricate fit between plants and animals and their environments. Darwin could explain this intricate fit as the

[5] Ibid.
[6] Ibid.
[7] Ibid., 2.

result of an algorithmic interplay between necessity and chance. His was at once the simpler and more comprehensive, and thus the more likely, explanation, for the "appearance of design" in nature.

"Cosmic Design" arguments, based on astronomy and physics, had been dead roughly since the physicist Pierre La Place had given a complete account of the movement of the planets with no need for God as an hypothesis, as La Place himself had bragged to the Emperor Napoleon. Well into the twentieth century, notions of "cosmic design" were, according to Manson, a "non-issue." [8]

However, this was based upon a large assumption. "It was simply assumed," as Manson writes, "that the universe is eternal and infinite, and that otherwise there is nothing for scientists (or philosophers) to say about it." [9]

An infinite, eternal cosmos seemed to most philosophers and scientists to stand in no need of further explanation. It just is.

But then came the theory of the Big Bang, first proposed in the 1920's as the "hypothesis of the primeval atom," by the Belgian Mathematical physicist—and catholic priest—Monsignor Georges Lemaitre, and confirmed by Arno Penzias and Robert Wilson in 1964.

Big Bang cosmology re-opened design arguments of both kinds.

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[8] Ibid., 3.
[9] Ibid., 3.

Big Bang theory meant that the universe actually had a life span: 12.5 billion years probably seems like a long time to most of us, but it is a much smaller number than infinity. According to Manson, this re-opened possibilities for organic design arguments because "the temporal and spatial finitude of the universe meant that there were not unlimited opportunities for life to originate by chance."[10]

The more dramatic impact, though, was on the cosmic argument for divine design.

That was because, as Manson tells us, the new cosmology disclosed the universe as "highly structured, with precisely defined parameters such as age, mass, entropy . . . curvature, temperature, density and rate of expansion. . . . Cosmologists were able to determine the values of these parameters to remarkably precise degrees."[11]

And this is where the notion of "anthropic coincidences" comes in. This, again, is Manson:

"The specificity of the universe prompted theoretical speculation of how the universe would have been if the values of its parameters had been different. This led to the discovery of numerous 'anthropic coincidences' and supported the claim that the universe is fine-tuned for life—that is, that the values of its parameters are such that, if they differed even slightly, life of any sort could not possibly have arisen in the Universe."[12]

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[10] Ibid. 2.
[11] Neil a. Manson, "Introduction, to Neil a. Manson, ed., *God and Design: The Teleological Argument and Modern Science* (New York: Routledge, 2003), 2.
[12] Manson, "Introduction," 2.

It is worth pointing out that, initially, many scientists strongly resisted the Big Bang model. As Manson says, it was greeted with "tremendous surprise and hostility."[13] It is generally agreed that part of the motivation for this resistance was religious—or, to be more clear, anti-religious. Resistance came from the group Barr calls materialists, who were displeased with the Big Bang theory's apparent harmony with a Judeo-Christian doctrine of creation.

One of the Big Bang's leading opponents was Sir Fred Hoyle, who held out for as long as the evidence would allow for his alternative "Steady State" theory of the universe. Hoyle is said to have been bothered by the consonance between the Big Bang and the creation story in the book of Genesis.[14] (If Dan Brown's priest in Exeter, New Hampshire had only known!)[15]

[Let me draw two points from this glimpse at a busy intersection between science, theology, and the philosophy of religion. The first point is that here is another nail in the myth of NOMA's coffin. Many religions make a claim for God's existence. With Design arguments, evidence for and against

[13] Ibid., 3.

[14]Christopher Southgate, Celia Deane-Drummond, Paul D. Murray, Michael Robert Negus, Lawrence Osborn, Michael Poole, Jacqui Stewart, and Fraser Watts, *God, Humanity and the Cosmos: A Textbook in Science and Religion* (Harrisburg, Penn.: Trinity Press International, 1999), 36.

[15] Hoyle wrote: "Unlike the modern school of cosmologists, who in conformity with Judaeo-Christian theologians believe the whole universe to have been created out of nothing, my beliefs accord with those of Democritus who remarked 'Nothing is created out of nothing.'" Ibid.,36, quoting Fred Hoyle, *Facts and Dogmas in Cosmology and Elsewhere* (Cambridge: Cambridge University Press, 1982), 2f.

those claims is drawn from science. This is another clear case whether the two "magisteria" can overlap.

The second point has to do with the intellectual battle between competing worldviews: a Judeo-Christian worldview on the one hand, and a "materialist" worldview on the other. Last week I quoted Stephen Barr, who emphasizes this clash of opposing metaphysical positions.**]**

Barr lists the discovery of the Big Bang, and of the anthropic coincidences that followed from it, with several other interesting "plot twists," as he calls them, in 20th century science. These plot twists added up to a reversal of fortune between the materialist and the traditionally religious worldviews. Part of this reversal can be seen in the fact that, whereas 19th century science, with Darwin and Pierre La Place, had seemingly laid Design arguments to rest, in the 20th century it was science that brought them back to life.

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Anthropic Coincidences: a Primer

Through this section, I will rely on Stephen Barr, *Modern Physics and Ancient Faith*.

"Anthropic." The word is from the Greek, *anthropos*, meaning ("man" or) "human being."

"Coincidences." We speak of anthropic coincidences because, as Barr writes, "it has been found that many features of the laws of physics seem to coincide exactly with what is required for the emergence of life to be possible."[16]

How are anthropic coincidences identified? We consider a given physical parameter of the universe (for example, the mass of an electron) then analyze "what that universe would have been like" if that parameter were other than it is.[17]

How many of these anthropic coincidences are there? Barr gives 11 examples that he thinks are "fairly solid," while adding that he could easily have listed more.[18]

[16] Barr, *Modern Physics and Ancient Faith*, 117.
[17] Ibid., 118.
[18] To some extent, Barr draws from a seminal book in this field, John d. Barrow and Frank J. Tipler, *The Anthropic Cosmological Principle* (Oxford: Oxford University Press, 1986).

Barr's 11 "anthropic coincidences," by title:

(1) The strength of the strong nuclear force
(2) The 3 alpha process
(3) The stability of the proton
(4) The strength of the electromagnetic force
(5) The value of *v*
(6) The cosmological constant
(7) The flatness of space
(8) The number of dimensions of space
(9) The quantum nature of the world
(10) The existence of electromagnetism
(11) The existence of matter

My disclaimer: I am happy to invoke limitations of time as a reason not to try to explain, or even briefly describe, all of these, because—I may as well admit it—it's all Greek to me. I'm embarrassed to confess that in college I gave the mathematics and physics buildings a wide berth. **[**(Philosophy and religion too: I have had a lot of catching up to do.)**]**

The Anthropic Coincidences

For those of you who actually know some science, and to give all you poets just a sample of scientific flavor, here for example is a capsule of what Barr says concerning the value of "*v*."

In particle physics, "the parameter *v* is the vacuum expectation value of the Higgs field," which determines the mass of most fundamental particles in nature. The value of *v* is "1," which is a good thing for us. If it were as high as 1.4, deuterium could not exist, and apart from deuterium, it is most unlikely that this universe could have produced any elements other than hydrogen. If its value were larger than 5, there could be no nuclei containing neutrons. If its value were smaller, there would be similar problems.

What puzzles physicists about this, according to Barr, is that the value of *v* is a function of various physical effects measured in huge numbers such as $10^{17.}$ When all the gigantic numbers are added and subtracted, they come out to 1. "It is as though," he writes, "there was a bank account in which many deposits and withdrawals were made in eighteen-figure amounts in dollars, but their activity came out to be just one dollar."[19]

And one was the only number that could have given rise to the likes of you and me.

[19] Barr, 126-28.

Would you like another?

Consider then the strength of the Strong Nuclear Force. The four basic forces in nature are gravity, electromagnetism, the "weak" force, and the strong nuclear force. The strong force holds atomic nuclei together. If the force were stronger or weaker than it is, the kinds of atoms that could exist would change. In nature as it stands, there are nearly 100 naturally occurring chemical elements. Hydrogen is the smallest, with one proton in the nucleus. Uranium, with 92 protons, is the largest. Physicists have calculated that if the strong force were 10% weaker than it is, the process of producing elements would have yielded only hydrogen. If it had been 4% stronger, the stars would have burned out too quickly to generate the elements required for life. In either case, there would have been no possibility for life.[20]

Finally, consider the Electromagnetic Force. How would the world have been different if there simply were no electromagnetic force? "Then," according to Barr, "there would have been no atoms and no chemistry, since atoms and molecules are held together by electric forces. There would have been no such thing as light, since light consists of electromagnetic waves. The universe obviously would have been radically different, and it is very difficult to imagine living structures having arisen."[21]

[20] Barr, 119-21.
[21] Barr, 137.

Other Sources

Perhaps you are asking yourself: Who are these people Keller's quoting? A couple of off-brand physicists who drank the Kool-aid in Sonoma?

The answer is no. These numbers are well-known, and the fact that a remarkable set of factors had to be exactly what they are for the universe to have given rise to life is not seriously disputed.

What remains disputed is what the numbers mean.

We will still hear a Nobel laureate like Stephen Weinberg saying things like:

"The more the universe seems comprehensible, the more it also seems pointless."[22]

But we also hear other scientists who disagree.

Charles H. Townes, University Professor of Physics Emeritus at the University of California at Berkeley, took the Nobel Prize in physics in 1964. Townes says the he is hesitant to "draw hard and fast conclusions," but he is impressed by the potential significance of these findings. "Regardless of what one may think this can say about God, what is striking here is that scientific evidence leads to a

[22] Weinberg quoted in Stephen M. Barr, *Modern Physics and Ancient Faith* (Notre Dame, Ind.: University of Notre Dame Press, 2003), 115.

feeling and hypothesis that the course of natural history is guided at least in part by an intelligence and purpose."[23]

Townes quotes his colleague, Princeton's Freeman Dyson:

"I conclude from the existence of these accidents of physics and astronomy that the universe is an unexpectedly hospitable place for our living creatures to make their home in. Being a scientist, trained in the habits of thought and language of the twentieth century rather than the eighteenth, I do not claim that the architecture of the universe proves the existence of God. I claim only that the architecture of the universe is consistent with the hypothesis that mind plays an essential role in its functioning."[24]

In our Institute for Theological Studies, the symbol of the candle stands both for faith finding understanding, and understanding giving rise to faith. The anthropic coincidences have led to at least one well known "conversion," in the case of the atheist philosopher Antony Flew. Flew was the author of a famous paper arguing that theological assertions about God were not so much untrue, as meaningless.

Now, late in life, Flew has decided that the anthropic coincidences require a "theistic," if not a Christian, explanation. He has become convinced that recent science has turned up facts about the

[23] Charles H. Townes, "Logic and Uncertainties in Science and Religion," in Ted Peters, ed., *Science and Theology: The New Consonance* (Boulder, Colo.: Westview Press / Perseus Books, 1998), 51.
[24] Ibid., quoting Freeman Dyson, *Disturbing the Universe* (New York: Harper and Row, 1979), 251.

world that support a strong case for God's existence. This is from Flew's new book, *There is a God: How the World's Most Notorious Atheist Changed His Mind*:

"The important point is not merely that there are regularities in nature, but that these regularities are mathematically precise, universal, and 'tied together.' Einstein spoke of them as 'reason incarnate.' The question we should ask is how nature came packaged in this fashion. This is certainly the question that scientists from Newton to Einstein to Heisenberg have asked—and answered. Their answer was the Mind of God."[25]

[25] Antony Flew, *There is a God: How the World's Most Notorious Atheist Changed His Mind* (HarperCollins e-books, 2007), 1156.

The Anthropic Coincidences and Christian Theologians

Interestingly enough, not all Christian theologians are prepared to go so far.

Among the figures active in the new dialogue about science and religion, one finds a range of opinion as to the theological significance of these numbers.

Arthur Peacocke speaks for Christians who are reticent with claims that these data demand a theistic explanation. He writes: "I remain inclined not to think the anthropic principle affords a design-type proof for the existence of a Creator God." [26]

Others, such as Francis Collins, are less reticent.[27]

Some, like Holmes Rolston, are open to the extension of anthropic arguments to data from organic evolution. "Life is an accident waiting to happen," he writes, "because it is blueprinted into the chemicals, rather as sodium and chlorine are preset to form salt, only much more startlingly so because of the rich implications for life and because of the openness and information transfer also

[26] Peacocke, *Paths*, 71.

[27] Collins, *Language of God*, 57–84.

present in the historical life process. Whatever place dice throwing has in its appearance and maturation, life is something arranged for in the nature of things. The dice are loaded." [28]

Peacocke speaks for the common denominator, a confident consensus view that, at the very least, the existence and attributes of the world we know are more than consistent with a theory of divine Creation. Peacocke: "What *can* be said on the basis of the anthropic principle is that our emergence in this universe is at least consonant with the postulate of a creator God."[29]

[28] Rolston, *Genes, Genesis and God*, 349.

[29] Peacocke, *Paths*, 71.

"Consonance"

Let me repeat that. I would like you to notice the word "consonant." Again, according to Arthur Peacocke, "What *can* be said on the basis of the anthropic principle is that our emergence in this universe is at least consonant with the postulate of a creator God."

We have been building a vocabulary for thinking about reasonableness in faith. Last week, I spoke of several "virtues" of reasonableness, including curiosity, honesty, fair-mindedness, and accountability. I have also emphasized two "criteria" for reasonableness: coherence and comprehension.

Now I want to take a moment to say a little more about "coherence."

Coherence is in some respects a matter of degree. At minimum, it requires that we not affirm ideas that are inconsistent. To say that a religious belief and a scientific finding are **inconsistent** means that they cannot both be true **[**(though it may be that both are false)**]**.

To speak of **"compatibility"** between a religious belief and a scientific finding is just to say that they are consistent." Two compatible ideas can both be true.

Peacocke's word was "consonance." **Consonance** adds a more positive note to compatibility. We can agree with William Dembski's suggestion that ideas are consonant when one, rather than "injecting discord or dissonance," establishes harmony with the other. The ideas "must not only be at

peace with one another, but also adapted to each other. Like a hand in a glove, there has to be a fit."[30]

That's what it means when writers have suggested there is a strong consonance between the biblical conception of a beginning of creation and the scientific account of the Big Bang. They are saying more than "they can both be true." They are calling our attention to a kind of harmony between them.

It was Fred Hoyle's perception of that consonance that motivated him to hold out for so long against the Big Bang, favoring his Steady State theory as a better fit for his materialist metaphysical commitment.[31]

[30] Dembski, *Intelligent Design*, 203.

[31] Ian Barbour, *Religion and Science: Historical and Contemporary Issues*, (San Francisco: HarperSanFrancisco / HarperCollins, 1997), 198–99

Epistemic support

Now let's take coherence yet a little farther.

In some instances, we can go deeper and say that the known truth of one idea, or fact, lends support to our believing in another.

William Dembski, the Intelligent Design theorist, calls this "epistemic support." It is also called the logic of "abduction."

Quoting Dembski, this is the form of the logic of abduction:

Data: The surprising fact A is observed.
Logic: *But if B were true, then A would be a matter of course*.
Conclusion: Hence, there is reason to suspect that B is true.[32]

Abductive inference can never make us certain that B is true, only that it may be. It is always possible to suggest that if C were true, or D, then A would also be a matter of course. In this circumstance, which in metaphysical affairs is the rule rather than the exception, A is considered to give epistemic support to B only when: (1) B is consonant with A, (2) B contributes to A (by solving

[32] Dembski, *Intelligent Design*, 200.

problems or answering questions pertinent to it), and (3) B is the reigning "champion" among competing theories.[33]

This is what it can mean—and is usually the most it can mean—to say that a theological idea is supported by a scientific one. If it worries some of you that I am quoting an "Intelligent Design" philosopher, the philosopher Elliott Sober uses abduction to explain how Darwinian natural selection supplanted William Paley's design hypothesis as the best explanation for the intricate fit between plants and animals in their environments.[34]

Abduction, like all forms of reasoning, is a double-edged sword that can cut both ways.

[33] Ibid., 203.

[34] Sober, *Philosophy of Biology,* 33–36.

Application

Now let's apply that form to these anthropic coincidences.

Data: A surprising fact "A" is observed: in many and various ways, this universe seems finely tuned for life.

Logic: But if "B" were true—if this universe had been designed to a purpose by an intelligent creator—then A would follow as a matter of course.

Conclusion: Hence there is reason to suspect that the universe has been designed by an intelligent creator.

In formal terms, that is the logic within the new design arguments for God's existence. It is claimed that "theory B," the postulate of an intelligent and purposeful creator, is the best explanation for a whole set of surprising facts about the world.

Now what about "C" and "D"? What other explanations could we conceive for these anthropic coincidences we have been discussing? Surely you weren't expecting the world's metaphysical materialists to run up the white flag—no religion, no intellectual tradition, ever surrenders so easily.

There are three objections to the idea of anthropic coincidences, and there are also three main theories for explaining them—with one of the theories being divine design.

To save time, I'm skipping the objections and going straight to the two competing explanations.

[*The Three Objections*, as Barr lists them, are:

(1) "The requirements for life are unknown." In point of fact, it has been suggested the "chemistry which uses only the single element of hydrogen could be rich enough to lead to living organisms."[35]
(2) "Conventional scientific explanations may exist." There are already plausible explanations for some of them.[36]
(3) This, as Barr allows, may be construed an extension of (2): "There may have been no room for choice." That is, it may just be the universe had to be the way it was.[37]**]**

The Three Possible Explanations

If "theory B" is divine design . . .

Then "theory C" is crazy luck: The existence of a world that could give rise to life is a wildly improbably accident, go figure. As Barr puts it, the anthropic coincidences "*are* just coincidences, pure and simple."[38] There is not much we can do with that, so lets turn our attention to . . .

[35] Barr, *Modern Physics and Ancient Faith*, 140.
[36] Ibid., 141.
[37] Ibid. 142.
[38] Ibid., 149.

"Theory D," nick-named "WAP," for the "Weak Anthropic Principle."

The Weak Anthropic Principle

We have heard the "God hypothesis" from Townes, Dyson, Flew as well as Christians. What is the "Weak Anthropic Principle?"

Following Barr, it goes like this:

"Suppose that there is a vast collection of universes, each having different laws of physics. . . . If there were a large enough number of types of universes in existence, then it would be no surprise if just by chance one of them had conditions propitious for life."[39]

This is sometimes called the theory of the "multiverse."

Barr gives two versions of it.

The first is a theory of "Many universes." On this theory, there are many universes "that have nothing whatever to do with each other.[40]

The second is the theory of "Many Domains," which has a much stronger scientific following. On this theory, ours is one domain or region within a larger universe that is moving in and out of different phases.[41]

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[39] Barr, *Modern Physics, Ancient Faith*, 150.
[40] Ibid., 152.

The Weak Anthropic Principle tells us that, given enough universes, and enough domains, eventually a universe would appear with the parameters required for giving rise to intelligent life. When the intelligence emerged, and was developed to the point that it could understand the math and physics, it would be struck by the seeming improbability of its own existence. But the odds were, it would eventually have had to happen somewhere. If a billion people had picked three numbers between 0 and 100, at least one would have probably picked 88, 1, and 5.

Barr illustrates the principle with a weak anthropic argument for the appearance of life on earth. So many parameters had to be exactly what they are for earth to have given rise to creatures like ourselves. The distance from the sun, the mass of our planet in relation to the moon, the presence of water, etc. It all can seem wildly improbable when you add up all the necessary factors.

But when we consider the age and size of the universe, the number of the stars, it becomes not improbable at all. Then we realize that it would be almost inevitable that there would be, somewhere, sometime, a planet such as ours, inhabited by thinking creatures.

The theory of the multiverse extends that principle to explain the existence of the universe we know.

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[41] Ibid.

Barr's Conclusion

So which is the more likely explanation: theory D or theory B? The multiverse, or God?

Barr says there seems to be a standoff between "the theist and the materialist when it comes to the anthropic coincidences. The first thing that should be said about this standoff is that, even if it cannot be resolved, it would give the lie to one of the materialist's main claims, which is that the scientific evidence points to the insignificance of man in the cosmic scheme." [42]

He is talking about claims like that of Steven Weinberg, that the universe seems "pointless." But the reason we have to have a theory of a multiverse is to try to account for the fact that the universe does *not* seem pointless—it seems fine-tuned for life. Barr continues:

"But is there really a standoff? More precisely, does the possibility of explaining anthropic coincidences by Many Domains or Many Universes scenarios really nullify their value as an argument in favor of theism? I am convinced the answer is no."[43]

That is because, in the first place, the "Many Universes" theory has "almost no following among scientists"[44] and "it seems that to abolish one unobservable God, it takes an infinite number of

[42] Barr, 153.
[43] Barr, 153.
[44] Ibid., 154.

unobservable substitutes."[45] And where did the universes come from? As Barr puts it: "The many universes with all their rich variety are just *supposed* to exist, by fiat, as it were. (Whose fiat? We are not supposed to ask.)"[46] Materialists, you see, have also been known to resort to "Nice boys don't ask that question."

Then what about the theory of Many Domains, for which there is significant support from scientists? Barr argues—and to the extent that I have digested his argument, I think I take his point—that the multiverse theory defers, rather than ends, the requirement for an explanation. Because a multiverse is still, apparently, a world of parameters, regularities and laws. We are still left to wonder why these are what they are. And we are still left to wonder why there should be a world, a universe, a multiverse, at all. Whenever we arrive at the question why there should be "something" rather than "nothing," the simplest and most comprehensive answer is "Divine creation." With or without anthropic coincidences, that would remain the case.

[I agree with Barr, that even if the weak anthropic theory of a multiverse is true, we are left with "the fact that our universe is a special kind of place." [47]**]**

If the theory of the multiverse is true, the cosmic design argument may again lose some of its force, but there would still be good reasons supporting faith in God.

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[45] 157.
[46] Ibid., 155.
[47] Ibid., 156.

Concluding Segment

In this talk, I have given you a lot of material that bears on the reasonableness of faith in God. Typically, somewhere along the way in life—the eighth grade is as good a time as any—it occurs to us to ask: "Is there proof that God exists?" In asking for "proof," a typical eighth grader is naively asking for a reason we can be absolutely sure. So we ask the question. And, typically, an answer we might receive is "No, there is no proof that God exists, but there is no proof he doesn't either." And all too often, that will be the end of the discussion.

I hope that, once you've had the opportunity to digest it, you will see that this class has given you a view beyond that typical, shrug-of-the-shoulders agnostic conclusion.

And that when your eighth-grader, Billy, comes home from school, puts his books down on the kitchen table and informs you: "There is no proof that God exists," you would now be in a position to reply more or less as follows:

"Actually, Billy, there are several kinds of "proofs"—ontological, cosmological and teleological—that you might be interested in studying someday. Its true that not everyone finds these proofs convincing, but others find them quite persuasive. The logic is sound, so it depends on whether you can accept the premises. It is true that we can't be absolutely certain God exists—philosophers will

tell you that, when it comes down to it, we can't be absolutely sure of anything. But we do have very good reasons for believing many things, including that our world was made by an intelligent, and purposeful, and loving God."

The best reasons for belief in God, we haven't come to yet. They are the stuff of revelation. But, even shy of the gospel, open-minded thinkers such as Flew, Townes and Dyson have been re-introduced to the reasonableness of faith in God.

[Today, I have introduced a criterion of reasonableness that is quite specific for purposes of comparing how well "God" explains the world as we know it, over and against the materialist alternative. The "God" hypothesis looks very strong in that comparison.

I have pointed to the anthropic coincidences as a rather impressive set of evidence that makes more sense if God does exist than if one stands on the proposition that the world just happens to exist and human life is accidental.

The materialists have always had one major problem with coherence. Science-minded materialists like Weinberg have struggled to reconcile their view of life as "pointless" with their admirable commitment to truth and ethics in science as values that are intrinsically worthwhile. It is difficult to defend that combinations of ideas as reasonable. Theirs is a worldview in which ethics and metaphysics are rather dis-consonant, to say the very least.

In the nineteenth century, Christians had experienced a certain dis-consonance too, between modern cosmology and the metaphysics in our doctrine of Creation. In the twentieth century, we have seen scientific cosmology realigned within comprehensive Christian worldview—in which scientific knowledge and religious belief more clearly do cohere and coalesce.**]**

A Muslim and a Jew

A final point.

I have been talking mostly about Christians, but this is an area where the monotheistic faiths seem so clearly to overlap.

The core participants in the new dialogue between religion and science are English and American Christians, like Murphy, Polkinghorne and Peacocke. But the anthropic coincidences have helped widen the discussion beyond that inner circle, and have opened wide-ranging discussions across national and religious boundaries. One set of these discussions produced a set of papers by scientists, published under the title *Science and the Spiritual Quest.*

In that book, a story is told by Cyril Domb. Professor Cyril Domb an Orthodox Jew, is Emeritus Professor of Physics at Bar-Ilan University in Israel. From 1954 to 1981, he was professor of Theoretical Physics at Kings College, London.

An interviewer asked Domb if Christians, Muslims and Jews should be able to find an important place of common ground, and to feel an underlying affinity, “in their way of seeing the physical universe as expressing the nature and activity of a creator?”

This was his answer:

"They should, I don't know whether they actually do. I can only think of individuals. I don't know much about the Muslim world, but the person who represented this for me more than anybody else was Abdus Salaam. When he won his Nobel prize he went to the mosque to give thanks to the Almighty for having done this for him. I sent him a telegram congratulating him and saying that I'd heard this and how wonderful it was in our own age to have people like him. In the nineteenth century many of the great scientists were deeply religious. I told him I was happy to find the religious tradition of Faraday and Maxwell being maintained in our own age. A couple of weeks later, I got a reply saying, 'there are few letters which have given me such pleasure. Bless you for writing."[48]

Amen.

[48] Cyril Domb, "Does Science Offer Evidence of a Purpose and a Transcendent Reality?" in W. Mark Richardson et al (*Science and the Spiritual Quest: New Essays by Leading Scientists* (New York: Routledge, 2002), 67.

(1) At the End

Again, these housekeeping points.

(1) I hope you were able to find last week's lecture notes. They are not, I repeat not, on the itssm.org website. We have a new site under construction that will be able to handle posting notes and whatnot, but it won't be ready until the class next spring.
(2) If you would like to be kept abreast of future offerings, including next spring's class, please sign in with your email address on the sheets I am passing around. It would help if you could give me the sheets you are holding in your hand at the end of the class.
(3) At the end, as we approach time for the service, if we could continue discussion in the Welcome center, that would allow people coming in for worship to settle in and say their prayers with a little peace and quiet.